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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/712,829
Filing Date: November 12, 2003
Appellant(s): LAMBERT ET AL.

MAILED
SEP 21 2007
GROUP 1700

Paul Grandinetti
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 26 July 2007 appealing from the Office
Action mailed 21 March 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct. Examiner notes that the first paragraph under "Summary of Claimed Subject Matter" section of the appellant's brief corresponds to claim 1. Likewise, the second paragraph under said section corresponds to claim 10, and the third paragraph corresponds to claim 11.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct. However, Examiner notes that the Huang et al. reference (US 5,712,214) has been cited as evidence throughout prosecution of the application-at-issue. Therefore, the grounds of rejection is more properly stated as: claims 1 through 20 are

unpatentable under 35 U.S.C. § 103(a) as being obvious over Wettling et al. (US 2003/0162918) in view of Ishikawa et al. (US 3,567,795), as evidenced by Huang et al. (US 5,712,214).

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2003/0162918	WETTLING et al.	08-2003
3,567,795	ISHIKAWA et al.	03-1971
5,712,214	HUANG et al.	01-1998

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under 103(a) as being unpatentable over Wettling (US 2003/0162918) in view of Ishikawa (US 3567795), as evidenced by Huang (US 5712214). Examiner notes that Huang has been cited throughout prosecution of the application-at-issue and is now explicitly included in the statement of rejection merely for consistency.

Art Unit: 1764

3. With respect to claim 1, Wettling discloses a process for catalyst deactivation of a crude polyolefin polymerized in the presence of a boron trifluoride catalyst whereby the crude polyolefin is washed with water (see Wettling, page 4, paragraph 62), the aqueous and organic phases are separated (see Wettling, page 4, paragraph 62), an aluminum oxide adsorbent (deactivator) is added to the organic phase to form a slurry (see Wettling, page 4, paragraph 54), the slurry is heated (see Wettling, page 5, paragraph 75), and the adsorbent is separated from the organic phase (see Wettling, page 5, paragraph 75).

Wettling does not disclose a process step for heating the slurry solution under reduced pressure.

However, Ishikawa discloses a process of eliminating an aluminum chloride polymerization catalyst from polymerization products whereby sodium silicate is brought into contact with a crude polymer solution and heated under conditions of reduced pressure so as to reduce the halogen content of such solution (see Ishikawa, column 5, lines 16-18). Furthermore, it is known in the art that a stripping operation to remove halogen impurities can be enhanced by carrying out such operation at conditions of reduced pressure (see, e.g., Huang, US 5712214, at column 5, lines 16-17). With regard to Applicant's limitation that the slurry be heated under reduced pressure "at a temperature of at least about 180°C for at least about thirty minutes," Examiner notes that Ishikawa discloses heating to a temperature of 100°C for thirty minutes (see Ishikawa, column 5, lines 16-18), while Huang discloses heating to a temperature of at least about 450°C (see Huang, column 5, lines 18-22). In this respect, the court has

instructed that differences in temperature generally will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating that such temperature is critical. See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Therefore, the person having ordinary skill in the art would have been motivated to modify the process of Wettling by heating the adsorbent/polymer slurry under conditions of reduced pressure as taught by Ishikawa and Huang so as to effect a better separation and removal of the halogen component from the crude polyolefin.

Finally, the person having ordinary skill in the art would have had a reasonable expectation of success in modifying the process of Wettling as described above because: (1) both Wettling and Ishikawa are directed to methods for refining hydrocarbon polymers polymerized in the presence of a halogen-containing catalyst, and (2) Wettling, Ishikawa, and Huang are all directed to methods for effecting the removal of halogen contaminants.

4. With respect to claims 2-4, Ishikawa discloses a process for the refining of hydrocarbon polymers obtained by polymerization with a Friedel-Crafts type catalyst (see Ishikawa, column 2, lines 22-34).

5. With respect to claim 5, Ishikawa discloses the use of silicates to remove polymerization catalyst impurities (see Ishikawa, column 2, lines 30-32). In addition, Wettling discloses the use of an aluminum oxide as an adsorbent (deactivator) to deactivate a boron trifluoride catalyst (see Wettling, paragraphs 42-44). Magnesium silicate is an art-recognized substitute for aluminum oxide as an adsorbent.

Art Unit: 1764

6. With respect to claims 6 and 7, Ishikawa discloses the heating of polymer solution under conditions of reduced pressure for a given duration (see Ishikawa, column 5, lines 17-18).

7. With respect to claim 8, Ishikawa discloses the use of a silicate to remove polymerization catalyst impurities (see Ishikawa, column 2, lines 22-34) employed at a level greater than 0.4 eq. metal/eq. halogen (see Ishikawa, column 2, lines 59-66).

8. With respect to claim 9, Wettling discloses the separation of catalyst adsorbent (deactivator) from an organic slurry phase (see Wettling, page 5, paragraph 75).

9. With respect to claim 10, the prior art discloses the removal of Friedel-Crafts type catalyst impurities from a crude polyolefin polymerized in the presence of such catalyst whereby the crude polyolefin is washed with water (see Wettling, page 4, paragraph 62), the aqueous and organic phases are separated (see Wettling, page 4, paragraph 62), a silicate is added to the organic phase to form a slurry (see Ishikawa, column 5, lines 8-9), the slurry is heated under reduced pressure (see Ishikawa, column 5, lines 17-18), and the silicate is separated from the slurry (see Ishikawa, column 5, line 17).

10. With respect to claim 11, Wettling discloses a process for catalyst deactivation of a crude polyolefin polymerized in the presence of a boron trifluoride catalyst whereby the crude polyolefin is washed with water (see Wettling, page 4, paragraph 62), the aqueous and organic phases are separated (see Wettling, page 4, paragraph 62), an aluminum oxide adsorbent (deactivator) is added to the organic phase to form a slurry (see Wettling, page 4, paragraph 54), the slurry is heated (see Wettling, page 5,

Art Unit: 1764

paragraph 75), and the adsorbent is separated from the organic phase (see Wettling, page 5, paragraph 75).

Wettling does not disclose a process step for heating the slurry solution under reduced pressure, or wherein the adsorbent used is selected from the group consisting of magnesium silicates, calcium silicates, and aluminum silicates.

However, Ishikawa discloses a process of eliminating an aluminum chloride polymerization catalyst from polymerization products whereby sodium silicate is brought into contact with a crude polymer solution and heated under conditions of reduced pressure so as to reduce the halogen content of such solution (see Ishikawa, column 5, lines 16-18). Furthermore, it is known in the art that a stripping operation to remove halogen impurities can be enhanced by carrying out such operation at conditions of reduced pressure (see, e.g., Huang, US 5712214, at column 5, lines 16-17). Finally, magnesium silicates, calcium silicates, and aluminum silicates are all art-recognized substitutes for aluminum oxide as an adsorbent. With regard to Applicant's limitation that the slurry be heated under reduced pressure "at a temperature of at least about 180°C," Examiner notes that Ishikawa discloses heating to a temperature of 100°C (see Ishikawa, column 5, lines 16-18), while Huang discloses heating to a temperature of at least about 450°C (see Huang, column 5, lines 18-22). In this respect, the court has instructed that differences in temperature generally will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating that such temperature is critical. See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Therefore, the person having ordinary skill in the art would have been motivated to modify the process of Wettling by heating the adsorbent/polymer slurry under conditions of reduced pressure as taught by Ishikawa and Huang so as to effect a better separation and removal of the halogen component from the crude polyolefin.

Finally, the person having ordinary skill in the art would have had a reasonable expectation of success in modifying the process of Wettling as described above because: (1) both Wettling and Ishikawa are both directed to methods for refining hydrocarbon polymers polymerized in the presence of a halogen-containing catalyst, and (2) Wettling, Ishikawa, and Huang are all directed to methods for effecting the removal of halogen contaminants.

11. With respect to claims 12-14, Ishikawa discloses a process for the refining of hydrocarbon polymers obtained by polymerization with a Friedel-Crafts type catalyst (see Ishikawa, column 2, lines 22-34).

12. With respect to claim 15, Ishikawa discloses the use of silicates to remove polymerization catalyst impurities (see Ishikawa, column 2, lines 30-32). In addition, Wettling discloses the use of an aluminum oxide as an adsorbent (deactivator) to deactivate a boron trifluoride catalyst (see Wettling, paragraphs 42-44). Magnesium silicate is an art-recognized substitute for aluminum oxide as an adsorbent.

13. With respect to claims 16 and 17, Ishikawa discloses the heating of polymer solution under conditions of reduced pressure for a given duration (see Ishikawa, column 5, lines 17-18). Moreover, Examiner submits that it would have been within the common sense knowledge of the person having ordinary skill in the art at the time the

invention was made that carrying out the process of Ishikawa at a higher temperature and for a longer period of time would *necessarily* result in a higher degree of catalyst contaminant removal from the olefin polymer.

14. With respect to claim 18, Ishikawa discloses the use of a silicate to remove polymerization catalyst impurities (see Ishikawa, column 2, lines 22-34) employed at a level greater than 0.4 eq. metal/eq. halogen (see Ishikawa, column 2, lines 59-66).

15. With respect to claim 19, Wettling discloses the separation of catalyst adsorbent (deactivator) from an organic slurry phase (see Wettling, page 5, paragraph 75).

With respect to claim 20, Wettling discloses the use of aluminum oxide as an adsorbent (deactivator) (see Wettling, page 3, paragraphs 42-44). Magnesium silicate is an art-recognized substitute for aluminum oxide as an adsorbent (see e.g., Applicant's Specification at page 13, lines 3-7).

16. With respect to claim 20, Wettling discloses the use of an aluminum oxide as an adsorbent (deactivator) to deactivate a boron trifluoride catalyst (see Wettling, paragraphs 42-44). Magnesium silicate is an art-recognized substitute for aluminum oxide as an adsorbent.

(10) Response to Argument

Appellant's arguments on page 6:

Appellant argues at page 6 of the brief that step (D) of the claims (i.e. "heating the slurry under reduced pressure at a temperature of at least about 180°C for at least about thirty minutes") is not disclosed or suggested by Wettling.

Examiner finds Appellant's arguments to be unpersuasive because one cannot show nonobviousness by attacking references individually where the rejections are based on a *combination* of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In this respect, Examiner notes that Ishikawa discloses heating to a temperature of 100°C for thirty minutes (see Ishikawa, column 5, lines 16-18), while Huang discloses heating to a temperature of at least about 450°C (see Huang, column 5, lines 18-22).

Appellant's arguments on page 7:

Appellant argues at page 7 of the brief that Wettling makes no mention of the water-insoluble silicates (i.e. magnesium silicate, calcium silicate, aluminum silicate) required by claims 10 through 20 of the application-at-issue.

Examiner notes that Wettling discloses aluminum oxide as a water-insoluble adsorbent material (deactivator) for the removal of halogen contaminant from a polyolefin (see Wettling, Abstract; and page 3, paragraph 44). Moreover, Ishikawa discloses the use of silicates as (aqueous) adsorbent materials for the removal of halogen contaminant from a polyolefin (see Ishikawa, Abstract; and column 2, lines 16-34). Therefore, the person having ordinary skill in the art would recognize that a water-insoluble silicate (e.g. aluminum silicate) would be effective as an adsorbent material for use in the process of Wettling.

Thus, Examiner finds Appellant's arguments to be unpersuasive because one cannot show nonobviousness by attacking references individually where the rejections are based on a *combination* of references. See In re Keller, 642 F.2d 413, 208

Art Unit: 1764

USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Appellant's arguments on page 8:

Appellant argues at page 8 of the brief that Ishikawa does not teach (1) use of the adsorbents of the application-at-issue; (2) step (D) of the claims (i.e. "heating the slurry under reduced pressure at a temperature of at least about 180°C for at least about thirty minutes"); and (3) the step of separating the adsorbent after a heating step.

Examiner finds Appellant's arguments to be unpersuasive because one cannot show nonobviousness by attacking references individually where the rejections are based on a *combination* of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In this respect, Examiner notes that Wettling provides for use of aluminum oxide as an adsorbent (see Wettling, page 3, paragraphs 42-44), which does meet the limitation of Applicant's choice of adsorbent in step (C) of claim 1. In addition, Wettling discloses the step of separating the adsorbent after a heating step (see Wettling, page 5, paragraph 75). Finally, with regard to Applicant's limitation that the slurry be heated under reduced pressure "at a temperature of at least about 180°C for at least about thirty minutes," Examiner notes that Ishikawa discloses heating to a temperature of 100°C for thirty minutes (see Ishikawa, column 5, lines 16-18), while Huang discloses heating to a temperature of at least about 450°C (see Huang, column 5, lines 18-22).

Art Unit: 1764

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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